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MORRISON & FOERSTER LLP
425 MARKET STREET
SAN FRANCISCO, CA 94105-2482

EXAMINER	
GODDARD, BRIAN D	

ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/747,602	GILSON, KENT	
	Examiner	Art Unit	
	Brian Goddard	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-70* is/are pending in the application.

4a) Of the above claim(s) *29-70* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/10/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to the Election in response to Restriction Requirement filed 19 October 2005.

2. Claims 2-70 are pending in this application. Of these, claims 2-28 have been elected for examination, while claims 29-70 have been withdrawn from further consideration, as below. This action is non-final.

Election/Restrictions

3. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 2-28, drawn to visual modeling of software (including identifying objects to be processed, symbol substitution, definition of dataset types, and resolving to design), classified in class 717, subclass 104.

II. Claims 29-54, drawn to code generation including (transforming a high level representation to a low level representation), classified in class 717, subclass 106.

III. Claims 55-59, drawn to object oriented dynamic linking, late binding (including changing the locus of synthesis), classified in class 719, subclass 332.

IV. Claims 60-65, drawn to object oriented messaging (including resolving variant data), classified in class 719, subclass 315.

V. Claim 67, drawn to optimization (including removing an exposer and a collector), classified in class 717, subclass 151.

VI. Claims 68-70, drawn to data transfer converting a data set, classified in class 719, subclass 329.

The inventions are distinct, each from the other for the following reason: Inventions I-VI taken pairwise are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)).

Regarding Invention I and Invention II a visual designer of software need not be integrated with a code generator. Similarly, design tools are separate tools than generation tools and are often mixed and matched across vendors, thus further underscoring the independence of the two types of tools.

Regarding Inventions III through VI, they are techniques that need not be applied to either Invention I or II. There are many visual modelers and generation tools that do not rely on changing the locus of synthesis, resolving variant data, removing exposers and collectors, and data transfer converting a data set. On the other hand, these techniques may be applied even to non-graphical tools (e.g. text or script representations of design or implementation).

Because these inventions are distinct for the reasons given above, and the search required for Groups I through VI are mutually exclusive, restriction for examination purposed as indicated is proper.

4. Applicant's election of Claims 2-28 (Group I) in the reply filed on 19 October 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

5. Claims 29-70 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Specification

6. The abstract of the disclosure is objected to because it does not "enable the reader thereof, regardless of his or her degree of familiarity with patent documents, to determine quickly from a cursory inspection of the nature and gist of the technical disclosure and should include that which is new in the art to which the invention pertains." Specifically, the abstract in total states, "A behavioral synthesis process is provided that transforms a generalized behavioral design into a detailed interconnection of design objects to implement the behavior." However, from this abstract, a reader could not determine quickly several key features about the invention. Some examples include: (1) that this was an invention directed to computer behavior, or (2) that the "generalized behavioral design" were graphical user interface objects to be manipulated

in a design program. The abstract should contain not only these two items, but also any particularly novel features that the reader should be aware about to determine the scope of the invention. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 2-28 are rejected under 35 U.S.C. 102(b) based upon a public use or sale of the invention. Specifically, the License and Agreement of Sale between Star Bridge Systems, Inc. and icaveo, Inc. executed on 30 April 1999 (See IDS filed 10 November 2005), and the License and Lease Agreement between Star Bridge Systems, Inc. and Ceristar, Inc. executed on 7 October 1999 (See IDS filed 10 November 2005) each indicate a "sale" of the Viva™ software, which appears to be the subject of the instant claims. The instant application repeatedly describes its subject software as the Viva™ software. Furthermore, the Title of Invention as originally filed in the instant application was "VIVA." Thus, the two documents indicating "sale" of the Viva™ software are each considered a prima facie "sale" of the invention.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 2-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,499,192 to Knapp et al. (hereafter 'Knapp') in view of U.S. Patent No. 6,135,647 to Balakrishnan et al. (hereafter 'Balakrishnan').

Referring to claim 2, Knapp discloses a method of identifying an object to be processed by one or more threads of execution substantially as claimed. See Figures 1-9 and the corresponding portions of Knapp's specification for this disclosure. In particular, Knapp teaches a computer implemented method [See Abstract, Background and Summary of Invention] of identifying an object [module] to be processed by one ore more threads of execution [computer aided design] comprising:

associating [circuit designer creates schematic by interconnecting functional modules with I/O modules to create a high level design (See Column 3, line 38 – Column 4, line 37 and Column 5, lines 3-25)] an output of a transport module ['I/O module' – includes Inputs, Outputs, Bidirectional I/Os and Bus Interfaces] with an input of a module [functional module];

propagating information from an input of the transport module to an output of the transport module [See Column 5, lines 12-18; Column 6, lines 11-25; and Column 7, line 57 – Column 8, line 61]; and

propagating the information from the output of the transport module to the module [See Column 5, lines 12-18; Column 6, lines 11-25; and Column 7, line 57 – Column 8, line 61].

Knapp does not explicitly state that the modules are "objects" as claimed. That is, Knapp does not explicitly state that the programming implementation is object-oriented. However, Knapp does allow for implementation in any programming language, as shown in Column 9, lines 42-54. Balakrishnan discloses a computer aided design system and method similar to that of Knapp, wherein the programmatic implementation is object oriented, having functional modules implemented as "objects" [See Column 3, line 34 – Column 4, line 45] as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Knapp's programmatic functionality in an object-oriented language, such as that of Balakrishnan, implementing Knapp's 'modules' as "objects", to obtain the invention as claimed. One would have been motivated to do so because of the suggestion provided by Knapp, as above, in view of the ease of software design implementation provided by Balakrishnan in which modules are easily implemented as objects in object-oriented design.

Referring to claim 3, the system and method of Knapp in view of Balakrishnan as applied to claim 2 above (hereafter 'Knapp/Balakrishnan') discloses the method as claimed. See the portions of Knapp and Balakrishnan cited above for the details of this disclosure. In particular, Knapp/Balakrishnan propagates information concerning

dataset type [Knapp: See Column 5, lines 12-18; Column 6, lines 11-25; and Column 7, line 57 – Column 8, line 61], as claimed.

Referring to claim 4, Knapp/Balakrishnan teaches a computer implemented method of directing symbol substitution [See above], comprising:

associating an output of a transport object [See claim 2 above] with a function descriptor object [Knapp: functional module];

propagating parameter information from an input of the transport object to an output of the transport object [See claim 2 above]; and

substituting an equivalent function descriptor object in place of the function descriptor object based upon the propagated parameter information [Knapp: once data type and precision information is propagated, the functional module is architecturally optimized (See Column 6, lines 26-63 and Column 8, line 62 – Column 9, line 35)] as claimed.

Claim 5 is rejected on substantially the same basis as claim 3, in light of the basis for claim 4. See the discussions regarding claims 1-4 above for this disclosure.

Regarding claims 6-8, Knapp/Balakrishnan teaches the computer implemented method of claim 4, as above, wherein for any given set or pattern of input information atoms, the function descriptor object will produce the same set or pattern of output information atoms as the other function descriptor object (claim 6); wherein the function descriptor object is logically equivalent to the other function descriptor object (claim 7); and wherein a data set of the function descriptor object is equal to a data set of the other function descriptor object (claim 8) as claimed. That is, regardless of the

physical/architectural implementation of a functional module in Knapp, it must produce equivalent output to any other implementation of that functional module given the same input parameters. See Column 6, lines 26-63 and Column 8, line 62 – Column 9, line 35 of Knapp for this disclosure.

Claim 9 is rejected on substantially the same basis as claim 3, in light of the basis for claim 8. See the discussions regarding claims 2-4 and 8 above for the details of this disclosure.

Regarding claims 10-13, Knapp/Balakrishnan teaches the computer implemented method of claim 4, as above, wherein an information rate of the function descriptor object is less than or equal to an information rate of the other function descriptor object (claim 10); wherein the propagated parameter information includes information rate information (claim 11); wherein an action latency of the function descriptor object is greater than or equal to action latency of the other function descriptor object (claim 12); and wherein the propagated parameter information includes action latency information (claim 13) as claimed. That is, the physical/architectural design chosen by Knapp's method for any given module is optimized based on the input constraints, to improve information rate and action latency. See Column 5 lines 26-40; Column 6, lines 26-63; and Column 8, line 15 – Column 9, line 24 of Knapp for this disclosure.

Claims 14-18 are rejected on substantially the same basis as one or more of claims 2-13 above. See the discussions regarding claims 2-13, as well as the portions of Knapp and Balakrishnan cited therein, for the details of this disclosure.

Claims 19-24 are also rejected on substantially the same basis as one or more of claims 2-13 above. See the discussions regarding claims 2-13, as well as the portions of Knapp and Balakrishnan cited therein, for the details of this disclosure. Specifically, Knapp/Balakrishnan's function descriptor objects (functional modules) are "variant dataset type function descriptor objects" as claimed, as the high level functional modules can accept any dataset type that is propagated downstream to them. See the portions of Knapp cited above for the details of this disclosure.

Referring to claim 25, Knapp/Balakrishnan teaches a computer implemented method of resolving a high level design into a detailed design [Knapp: See Abstract & Summary] comprising:

creating a graphical diagram in a computer system display [Knapp: See Column 5, lines 3-25 & 41-60];

which represents an algorithm [Knapp: See Column 5, lines 3-25 & 41-60]

which includes a variant equivalent function descriptor graphical object [Knapp: functional components (See Column 5, lines 41-60)]

which includes one or more variant transport graphical objects, each including an input node and an output node [Knapp: interconnections between the functional components (See Column 5, lines 41-60)], and

wherein the diagram represents the variant equivalent function descriptor graphical object coupled to one or more respective output nodes of one of the one or more variant transport graphical objects [Knapp: See Column 5, lines 41-60];

automatically creating a design in a computer readable medium,

which corresponds to the diagram [Knapp: See Column 5, line 61 et seq.],

which includes a variant equivalent function descriptor design object that corresponds to the variant equivalent function descriptor graphical object [Knapp: functional module]

which includes one or more variant transport design objects that correspond to the one or more variant transport graphical objects [Knapp: I/O module],

wherein each variant transport design object includes an input node and an output node [See above], and

wherein the variant equivalent function descriptor design object is coupled to one or more respective output nodes of one of the one or more variant transport design objects [See above];

associating respective information with respective input nodes of the one or more variant transport design objects [Knapp: data type and precision information is specified at one or more points within the design (See Column 5, lines 12-18; Column 6, lines 11-25; and Column 7, line 57 – Column 8, line 61)];

propagating the respective information...[Knapp: data type propagation step (See Column 5, lines 12-18; Column 6, lines 11-25; and Column 7, line 57 – Column 8, line 61)]; and

substituting a less variant equivalent function descriptor design object into the design...[Knapp: architectural optimization step (See Column 6, lines 26-63 and Column 8, line 62 – Column 9, line 35)] as claimed.

Referring to claim 26, Knapp/Balakrishnan teaches the method of claim 25 as above, further including substituting a less variant equivalent function descriptor graphical object into the diagram in place of the variant equivalent function graphical object based upon the propagated explicit information [Knapp: display is updated after architectural optimization for simulation purposes (See Column 5, line 61 et seq.)] as claimed.

Claim 27 is rejected on substantially the same basis as claim 3 in light of the basis for claim 25. See the discussions regarding claims 2-3 and 25 above for the details of this disclosure.

Claim 28 is rejected on substantially the same basis as claim 25, in light of the basis for claim 2. See the discussions regarding claims 2 and 25 above for the details of this disclosure.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goddard whose telephone number is 571-272-4020. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bdg
06 January 2006

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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100